

1 (C) AMENDMENTS TO THE CLAIMS

2 The Action in para. 3., Page 2, calls for a "...complete listing of all claims with correct
3 claim numbers to clarify the record." The following is the requested submission. The
4 amendments to claims 2 and 3 relate to the Appendix and the Detailed Description at
5 e.g., page 16, lines 13-16; page 22, lines 6-8. The other claims currently amended
6 relate to corrections of a typographical or syntactical nature.

7 1. (ORIGINAL) An electronically addressable display comprising:
8 a substrate;
9 associated with the substrate, an addressable display bi-modal molecular
10 colorant stratum; and
11 associated with the molecular colorant stratum, an addressing device mounted
12 for selectively switching colorant molecules of the stratum between at least two visually
13 distinguishable states.

14 2. (CURRENTLY AMENDED) The display as set forth in claim 1 comprising:
15 a first of said two distinguishable states is a transparent state or a colored state.

16 3. (CURRENTLY AMENDED) The display as set forth in claim 2 comprising:
17 a second of said two distinguishable states is [[an opaque color]] another
18 colored state.

19 4. (ORIGINAL) The display as set forth in claim 1, said bi-modal molecular colorant
20 stratum comprising:
21 a molecular system, said system including electrochromic, switchable molecules,
22 each of said molecules being selectively switchable between said at least two optically
23 distinguishable states, wherein said system is distributable on the substrate thereby
24 forming a display screen region.

25 5. (ORIGINAL) The display as set forth in claim 1 comprising:
26 said colorant molecules exhibit an electric field induced band gap change.

1 6. (ORIGINAL) The display as set forth in claim 5 comprising:

2 said electric field induced band gap change occurs via a mechanism selected
3 from a group including (1) molecular conformation change or an isomerization, (2)
4 change of extended conjugation via chemical bonding change to change the band gap,
5 and (3) molecular folding or stretching.

6 7. (ORIGINAL) The display as set forth in claim 5 comprising:

7 said electric field induced band gap change occurs via a molecular conformation
8 change or an isomerization.

9 8. (ORIGINAL) The display as set forth in claim 7 wherein the molecules forming
10 the molecular system further comprise:

11 at least one stator portion and at least one rotor portion, wherein said rotor
12 rotates from a first state to a second state with an applied electric field, wherein in said
13 first state, there is extended conjugation throughout said molecular system, resulting in a
14 relatively smaller band gap, and wherein in said second state, said extended conjugation
15 is destroyed, resulting in a relatively larger band gap.

16 9. (ORIGINAL) The display as set forth in claim 7 comprising:

17 dependent upon direction of electrical field applied, in a first of said states said
18 colorant molecules are in a more conjugated state throughout, having a relatively
19 smaller band gap, and in a second of said states said colorant molecules are in a less
20 conjugated state throughout, having a relatively larger band gap.

21 10. (ORIGINAL) The display as set forth in claim 5 comprising:

22 said electric field induced band gap change occurs via a change of extended
23 conjugation via chemical bonding change to change the band gap.

24 11. (CURRENTLY AMENDED) The display as set forth in claim 10 comprising:

1 said electric field induced band gap change occurs via a change of extended
2 conjugation via charge separation or recombination accompanied by increasing or
3 decreasing band delocalization.

4 12. (CURRENTLY AMENDED) The display as set forth in claim 11 comprising:
5 a change from a first state to a second state occurs with an applied electric field,
6 said change involving charge separation in changing from said first state to said second
7 state, resulting in a relatively ~~larger~~ smaller band gap state, with ~~less~~ greater π -
8 delocalization, and recombination of charge in changing from said second state to said
9 first state, resulting in a relatively ~~smaller~~ larger band gap state, with ~~greater~~ less π -
10 delocalization.

11 13. (ORIGINAL) The display as set forth in claim 5 comprising:
12 said electric field induced band gap change occurs via a change of extended
13 conjugation via charge separation or recombination and π -bond breaking or formation.

14 14. (CURRENTLY AMENDED) The display as set forth in claim 13 comprising:
15 a change from a first state to a second state occurs with an applied electric field, said
16 change involving charge separation in changing from said first state to said second
17 state, wherein in said first state there is no extended conjugation throughout, resulting in
18 a relatively larger band gap state, and wherein in said second state said extended
19 conjugation is ~~destroyed~~ formed and separated positive and negative charges are
20 created, resulting in a relatively smaller band gap state.

21 15. (ORIGINAL) The display as set forth in claim 5 comprising:
22 said electric field induced band gap change occurs via a molecular folding or
23 stretching.

24 16. (ORIGINAL) The display as set forth in claim 15 comprising:
25 said colorant molecule has three portions, a first portion and a third portion, each
26 bonded to a second, central portion, wherein a change from a first state to a second
27 state occurs with an applied electric field, said change involving a folding or stretching

1 about or of said second portion, wherein in said first state there is extended conjugation,
2 resulting in a relatively smaller band gap state, and wherein in said second state, said
3 extended conjugation is destroyed, resulting in a relatively larger band gap.

4 17. (ORIGINAL) The display as set forth in claim 1 comprising:
5 said colorant molecules are arranged to form discrete, addressable picture
6 elements of said display stratum.

7 18. (ORIGINAL) The display as set forth in claim 17 comprising:
8 said addressing device is configured for switching selected said picture elements
9 between a transparent state and a colored state.

10 19. (ORIGINAL) The display as set forth in claim 17 comprising:
11 said addressing device is configured for switching selected said picture elements
12 between two visually distinctive color states.

13 20. (ORIGINAL) The display as set forth in claim 1 comprising:
14 said colorant molecules are bistable, providing a non-volatile component.

15 21. (ORIGINAL) The display as set forth in claim 1 comprising:
16 said colorant molecules have a low activation barrier between different said
17 states providing a fast volatile switching therebetween.

18 22. (ORIGINAL) The display as set forth in claim 1 comprising:
19 said colorant molecules have more than two said states, switchable such that
20 optical properties of said stratum can be tuned either continuously by application of a
21 decreasing or increasing electric field to form a volatile switch or color of selected
22 display regions are changed abruptly by application of voltage pulses to switch at least
23 one molecular activation barrier.

24 23. (ORIGINAL) The display as set forth in claim 1 in a computer apparatus.

1 24. (ORIGINAL) The display as set forth in claim 1 in an electronic appliance.

2 25. (ORIGINAL) The display as set forth in claim 24 wherein said electronic
3 appliance is an appliance in the group including test and monitoring instruments, musical
4 instruments, telecommunications devices, personal computing devices, digital
5 photographic devices, or image projection devices.

6 26. (ORIGINAL) An electronic appliance comprising:
7 an appliance housing; and
8 incorporated with the housing, a display device, the display device including at least one
9 writeable imaging stratum forming a pixel array of a bi-modal molecular colorant, and an
10 addressing device mounted for selectively switching colorant molecules of the imaging
11 stratum.

12 27. (PREVIOUSLY AMENDED) The appliance as set forth in claim 26 comprising:
13 adjacent said imaging stratum, a background stratum in black, white or a
14 predetermined color, wherein said addressing device switches said colorant molecules
15 between a transparent orientation and a color-exhibiting orientation such that said
16 background stratum provides high contrast as viewed through the colorant molecules in
17 the transparent orientation with respect to the colorant molecules in the color-exhibiting
18 orientation.

19
20 28. (PREVIOUSLY AMENDED) The appliance as set forth in claim 26 comprising:
21 said imaging stratum further comprising colorant molecules having a first state
22 wherein a picture element formed of said molecules in said first state are displayed in a
23 first color, including black or white, and said colorant molecules having a second state
24 wherein a picture element formed of said molecules in said second state are displayed
25 in a second color, including white or black, presenting a visually high contrast to
26 molecules in said first state.

27 29. (PREVIOUSLY AMENDED) The appliance as set forth in claim 26 wherein said
28 appliance is selected from a group including computers, computing machines of both

1 hard-wired, fixed location and portable types, calculators, electronic books, monitoring
2 instruments, musical instruments or music stands, networked workstations, personal
3 digital assistants, telephones, televisions, test instruments, video games, or wired or
4 wireless communication devices.

5 30. (PREVIOUSLY AMENDED) The appliance as set forth in claim 26 comprising:
6 said display is a fixed geometry position screen.

7 31. (PREVIOUSLY AMENDED) The appliance as set forth in claim 26 comprising:
8 said display is a retractable geometry positionable screen.

9 32. (PREVIOUSLY AMENDED) The appliance as set forth in claim 26 comprising:
10 said colorant molecules are arranged to form discrete, addressable picture
11 elements of said display stratum.

12 33. (PREVIOUSLY AMENDED) The appliance as set forth in claim 26 comprising:
13 said colorant molecules are bistable, providing a non-volatile component.

14 34. (PREVIOUSLY AMENDED) The appliance as set forth in claim 26 comprising:
15 said colorant molecules have a low activation barrier between different said
16 states providing a fast volatile switching therebetween.

17 35. (PREVIOUSLY AMENDED) The appliance as set forth in claim 26 comprising:
18 said colorant molecules have more than two said states, switchable such that
19 optical properties of said stratum can be tuned either continuously by application of a
20 decreasing or increasing electric field to form a volatile switch or color of selected
21 display regions are changed abruptly by application of voltage pulses to switch at least
22 one molecular activation barrier.

23 36. (ORIGINAL) A visual display comprising:
24 at least one writeable imaging stratum forming a pixel array of a bi-modal
25 molecular colorant; and

1 at least one addressing device mounted for selectively switching colorant molecules of
2 the imaging stratum.

3 37. (PREVIOUSLY AMENDED) The display as set forth in claim 36 comprising:
4 adjacent said imaging stratum, a background stratum in black, white or a
5 predetermined color, wherein said addressing device switches said colorant molecules
6 between a transparent orientation and a color-exhibiting orientation such that said
7 background stratum provides high contrast as viewed through the imaging stratum
8 regions where the colorant molecules in the transparent orientation with respect to the
9 colorant molecules in the color-exhibiting orientation.

10 38. (PREVIOUSLY AMENDED) The display as set forth in claim 36 comprising:
11 said imaging stratum further comprising colorant molecules having a first state
12 wherein a picture element formed of said molecules in said first state are displayed in a
13 first color, including black or white, and said colorant molecules having a second state
14 wherein a picture element formed of said molecules in said second state are displayed
15 in a second color, including white or black, presenting a visually high contrast to
16 molecules in said first state.

17 39. (PREVIOUSLY AMENDED) The display as set forth in claim 36 comprising:
18 said display is a fixed geometry position screen.

19 40. (PREVIOUSLY AMENDED) The display as set forth in claim 36 comprising:
20 said display is a retractable geometry positionable screen.

21 41. (ORIGINAL) The display as set forth in claim 36 comprising:
22 said colorant molecules are arranged to form discrete, addressable picture
23 elements of said display stratum.

24 42. (ORIGINAL) The display as set forth in claim 36 comprising:
25 said colorant molecules are bistable, providing a non-volatile component.

1 43. (ORIGINAL) The display as set forth in claim 36 comprising:
2 said colorant molecules have a low activation barrier between different said
3 states providing a fast volatile switching therebetween.

4 44. (ORIGINAL) The display as set forth in claim 36 comprising:
5 said colorant molecules have more than two said states, switchable such that
6 optical properties of said stratum can be tuned either continuously by application of a
7 decreasing or increasing electric field to form a volatile switch or color of selected
8 display regions are changed abruptly by application of voltage pulses to switch at least
9 one molecular activation barrier.

10 45. (ORIGINAL) The display as set forth in claim 36 comprising:
11 a plurality of imaging strata forming a display ensemble wherein each of said
12 imaging strata includes a pixel array of a bi-modal molecular colorant such that colorant
13 molecules thereof are selectively switchable between a transparent state and a primary
14 color state, and
15 associated with each of said imaging strata, addressing devices mounted for selectively
16 switching colorant molecules of respectively associated imaging stratum of said imaging
17 strata.

18 46. (ORIGINAL) The display as set forth in claim 36 comprising:
19 said imaging strata is a mosaic pattern of colorant molecules arranged in
20 addressable picture element groups.

21 47. (ORIGINAL) The display as set forth in claim 46 wherein said mosaic pattern is
22 formed with ink-jet technology.

23 48. (PREVIOUSLY SUBMITTED) A method for displaying digital data, the method
24 comprising:
25 selectively producing localized electric fields at picture elements of a viewing
26 screen; and

1 using said fields to induce band gap changes in molecules forming said picture
2 elements thereby changing an optical property thereof.

3 49. (ORIGINAL) The display as set forth in claim 36, said addressing means
4 comprising:
5 molecular crossbar wiring.

6 50. (PREVIOUSLY SUBMITTED) A method of fabricating a rewritable display
7 screen, the method comprising: depositing a substantially homogeneous layer of bi-
8 modal molecular colorant on a surface; and providing addressable elements adjacent
9 said surface for matrix addressing said surface as addressable picture elements.

10 51. (ORIGINAL) The method as set forth in claim 50 comprising:
11 forming the molecular colorant having electric field changeable colorant
12 molecules.

13 52. (ORIGINAL) The method as set forth in claim 51 comprising:
14 providing said colorant molecules wherein said molecules are at least bi-modal.

15 53. (ORIGINAL) The method as set forth in claim 51 comprising:
16 providing said colorant molecules wherein said molecules are bistable.

17 54. (ORIGINAL) The method as set forth in claim 50 comprising:
18 forming each addressable picture element of a set of molecules wherein said
19 colorant molecules exhibit an electric field induced band gap change.

20 55. (ORIGINAL) The method as set forth in claim 54 comprising:
21 inducing said band gap change via a mechanism selected from a group including
22 (1) molecular conformation change or an isomerization, (2) change of extended
23 conjugation via chemical bonding change, and (3) molecular folding or stretching.

1 56. (CANCELLED) ~~A method of document retrieval using an internet, the method~~
2 ~~comprising:~~
3 ~~— from a telecommunications appliance, ordering the document over the internet;~~
4 ~~downloading the document from the internet into the telecommunications appliance; and~~
5 ~~displaying the document on a display associated with the telecommunications appliance~~
6 ~~by forming an image of the document on a pixel array of a rewritable bi-modal molecular~~
7 ~~colorant.~~

8 57. (PREVIOUSLY SUBMITTED) A method of doing business with respect to
9 document publishing and retrieval, the method comprising:
10 providing a wireless communications site including a server for publishing
11 document content; and
12 downloading from said site to a wireless telecommunications appliance document
13 content data for read-only display by forming a selectable page-by-page pixel array on a
14 bi-modal molecular colorant display associated with said appliance.

15 58. (PREVIOUSLY SUBMITTED) A wireless communications appliance, comprising:
16 a wireless interface;
17 a display screen having at least one writeable imaging stratum forming a pixel array of a
18 bi-modal molecular colorant; and
19 at least one addressing device mounted for selectively switching colorant molecules of
20 the imaging stratum.

21 59. (PREVIOUSLY SUBMITTED) The appliance as set forth in claim 58, said bi-
22 modal molecular colorant comprising:
23 a molecular system, said system including electrochromic, switchable molecules,
24 each of said molecules being selectively switchable between said at least two optically
25 distinguishable states, wherein said system is distributable on the substrate thereby
26 forming a display screen region.

27 60. (PREVIOUSLY AMENDED) The appliance as set forth in claim 58 comprising:
28 said colorant molecules exhibit an electric field induced band gap change.

1 61. (PREVIOUSLY SUBMITTED) The appliance as set forth in claim 60
2 comprising:

3 said electric field induced band gap change occurs via a mechanism selected
4 from a group including (1) molecular conformation change or an isomerization, (2)
5 change of extended conjugation via chemical bonding change to change the band gap,
6 and (3) molecular folding or stretching.

7 62. (PREVIOUSLY SUBMITTED) A projection apparatus comprising:

8 display means for projecting an image, said display means having a transparent
9 substrate and, associated with said substrate, at least one writeable imaging stratum
10 forming a pixel array of a bi-modal molecular system; and

11 associated with said imaging stratum, at least one addressing means for
12 selectively switching colorant molecules of the imaging stratum forming an image for
13 projection.

14 63. (CANCELLED) ~~An electronically addressable display comprising:~~

15 ~~—— a translucent substrate having a means for backlighting said substrate~~
16 ~~associated therewith;~~

17 ~~associated with the substrate, an addressable display bi-modal molecular colorant~~
18 ~~system; and~~

19 ~~associated with the molecular colorant system, an addressing means mounted for~~
20 ~~selectively switching colorant molecules of the system between at least two visually~~
21 ~~distinguishable states wherein one of said states produces a color of high contrast with~~
22 ~~respect to said translucent substrate and another one of said states is transparent.~~

23 64. (PREVIOUSLY SUBMITTED) An electric field addressable viewing screen
24 comprising:

25 a substrate;

26 at least one layer of a bi-modal molecular colorant associated with said substrate
27 such that colorant molecules are addressable as picture elements of the viewing screen,
28 electrically switching the colorant molecules between at least two visually distinct states
29 selectively.

1 65. (PREVIOUSLY SUBMITTED) The invention as set forth in claim 64 said colorant
2 further comprising:

3 a bi-modal molecular system for creating alphanumeric characters and graphic
4 images.

5 66. (PREVIOUSLY SUBMITTED) The invention as set forth in claim 65 wherein each
6 of said molecules exhibit an electric field induced band gap change.

7 67. (PREVIOUSLY SUBMITTED) The invention as set forth in claim 66 wherein said
8 electric field induced band gap change occurs via a mechanism selected from a group
9 including (1) molecular conformation change or an isomerization, (2) change of extended
10 conjugation via chemical bonding change to change the band gap, and (3) molecular
11 folding or stretching.

12
13 68. (CANCELLED) ~~A method for generating a visual display from a digital data set~~
14 ~~representative of text, images, or both, the method comprising:~~
15 ~~—— converting the digital data set to electrical signals for generating individual picture~~
16 ~~elements representative thereof; and~~
17 ~~—— sending said signals to local electric field generating devices associated with a~~
18 ~~viewing surface, the screen having a molecular colorant stratum such that said signals~~
19 ~~induce local electrical fields in said stratum causing said molecules thereof to switch~~
20 ~~between at least two optically distinguishable states at said individual picture elements~~
21 ~~such that said digital data set is visually displayed thereby.~~

22 69. (CANCELLED) ~~The method as set forth in claim 68 wherein each of said~~
23 ~~molecules exhibit an electric field induced band gap change.~~

24 70. (CANCELLED) ~~The method as set forth in claim 69 wherein said electric field~~
25 ~~induced band gap change occurs via a mechanism selected from a group including (1)~~
26 ~~molecular conformation change or an isomerization, (2) change of extended conjugation~~
27 ~~via chemical bonding change to change the band gap, and (3) molecular folding or~~
28 ~~stretching.~~